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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,695	09/03/2004	William F. Howard	WEAT/0196 P	4873
<div>7590 William B Patterson Moser Patterson &amp; Sheridan Suite 1500 3040 Post Oak Boulevard Houston, TX 77056</div>			<div>EXAMINER BOMAR, THOMAS S</div>	
			<div>ART UNIT 3672</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 07/27/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/506,695		HOWARD ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Shane Bomar		3672	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 26,27,33-39 and 47-78 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 47-69 is/are allowed.
- 6) ☒ Claim(s) 26,27,33-39 and 70-78 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claim 27 is objected to because of the following informalities: the recitation of “the nozzle” lacks proper antecedent basis in claim 26. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 26, 27, 33-35, 70-72, and 74-78 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,648,455 to Luke.

Regarding claim 26, Luke discloses an apparatus for injecting steam at a controlled flow rate into a geological formation (see Fig. 1 and col. 1, lines 7-10). The apparatus comprises a flow path between a well surface and the formation F1, the flow path including at least one nozzle 16, wherein the nozzle is variable to convert steam to a critical flow rate at an annulus/tubing pressure ratio that is inherently up to about 0.9 (see col. 4, lines 37-42). There are at least two apertures 12a in the tubular (Fig. 3A). The pressure ratio is inherently up to 0.9 since it was disclosed on page 9 of the applicant's specification that prior art nozzles produce critical flow with annulus/tubing pressure ratios at or below 0.56, which is included in the limitation of “up to about 0.9”.

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Regarding claim 33, Luke discloses an apparatus for injecting steam at a controlled flow rate into multiple zones of interest adjacent a wellbore (see col. 1, lines 7-10). The apparatus comprises a tubular string TS for transporting steam into the wellbore from the surface of the well, wherein the string has a plurality of apertures 12a; and at least two nozzles 16 disposed along the string, wherein each nozzle 16 is adjacent a first F1 and second F2 zone of interest and each nozzle has a throat portion 16a and a diffuser portion 16b (see Figs. 1, 3A, and 3B). Since there is a configuration of a nozzle and apertures 12a at each zone, then each zone will inherently have a liquid/water ratio based on the dimensions of each aperture and nozzle.

Regarding claim 34, the apparatus of claim 33 further includes a sealing means PR isolating an annular area above and below each nozzle, wherein the annular area is formed between the tubular TS and walls of the wellbore (see Fig. 1).

Regarding claims 27 and 35, the apparatus of claims 26 or 33 further comprises an obstructing member (the upset portion between 10b and 9b in Fig. 3B) downstream of the nozzle that will hinder a portion of the fluid from flowing downstream in the preferential direction.

Regarding claim 70, Luke discloses a method of injecting steam into a formation, the method comprising: introducing the steam into a wellbore via a string of tubing, the tubing having a first injection point CH1 axially spaced from a second injection point CH; and regulating the steam introduced at each injection point by varying a nozzle arrangement at the injection point (comparing Figs. 2 and 3A shows that the nozzles are arranged differently), wherein the nozzle arrangement includes a nozzle 1 or 16 having a throat portion and a diffuser portion (Figs. 1-3B; col. 4, lines 28-34).

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Regarding claims 71 and 72, the injection points are spaced relative to the steam generator PP, therefore the regulation of steam is based upon this relation, and the steam flows through the nozzle 16 at a critical flow rate (Fig. 1, col. 4, lines 37-42).

Regarding claim 74, the steam is introduced at a pressure that must be adequate to overcome the natural pressure and impermeability of the formation or the injection of steam into the formation would fail.

Regarding claim 75, further including causing a flow of the steam through the tubing whereby a water component of the steam travels in an annular fashion along an inner wall of the tubing (see col. 4, lines 3-10).

Regarding claim 76, the method further includes removing the nozzle and inherently replacing it with a second nozzle (see col. 1, line 67 through col. 2, line 4 and claim 18).

Regarding claims 77 and 78, the throat diameter is sized at the injection point, and the steam is passed through a selected number of apertures 12a in the tubing (Fig. 3A and col. 4, lines 37-42).

4. Claims 36-39 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,318,464 to Mokrys.

Mokrys discloses an apparatus for injecting steam into multiple wellbores 30 from a single source of steam 96, wherein the apparatus comprises a fluid path from the source 96 to each wellbore, the fluid path including a plurality of apertures since the tubing is perforated along a portion of its length at 36 and 38; and there is at least one nozzle 110 included in each fluid path for controlling, along with the amount of perforations in the tubular, a flow of steam

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using critical flow, the nozzle having a throat and diffuser (see Figs. 1, 2a, and 7; col. 11, lines 1-18).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 73 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luke in view of US 5,990,370 to Sims.

Luke teaches a method of injecting steam into a formation through a nozzle 16 at a critical flow rate as applied to claim 70 above. It is not taught that the critical flow rate is maintained when the annulus/tubing pressure ratio is greater than 0.56.

Sims teaches a nozzle that can inject steam into a formation and maintain critical flow as long as the pressure ratio is below 0.85 (see col. 3, lines 20-26). At the time the invention was

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made, it would have been obvious to one of ordinary skill in the art to use the nozzle taught by Sims with the method of injecting steam taught by Luke. One would have been motivated to make this combination so that critical flow can be maintained at pressure ratios below 0.85 as taught by Sims.

***Allowable Subject Matter***

8. Claims 47-69 are allowed.

***Response to Arguments***

9. Applicant's arguments filed May 16, 2007 have been fully considered but they are not persuasive. The Applicant argues that Luke can't anticipate claims 26 and 33 since Luke does not have at least two apertures in the tubular, nor does Luke teach that the liquid/water ratio is based on a configuration of the nozzle and apertures. However, Luke does disclose apertures 12a in the tubing, and since the apertures and nozzle are configured to work together to inject the steam into the formation, the size of the apertures and the nozzle will provide a certain liquid/water ratio of the stem that passes through the apertures and nozzle. The Applicant then argues that Mokrys can't anticipate claims 36 and 37 because Mokrys does not disclose a nozzle and apertures in a string of tubulars. While Mokrys does disclose a nozzle and a plurality of perforations, or apertures, in the tubing, the nozzle and the apertures do not have to be in the same string because this is not what the claims recite. Therefore, the arguments are more limiting than the claims themselves. The Applicant also does not believe that the subject matter

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of new claim 70 is disclosed or taught by the prior art of record, however, the Examiner does believe that Luke discloses the method of claim 70, as seen in the rejections above.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

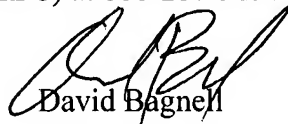
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 571-272-7026. The examiner can normally be reached on Monday - Thursday from 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David Bagnell  
Supervisory Patent Examiner  
Art Unit 3672

July 22, 2007

tsb(  )